We claim:

1. A method of selecting an asphalt binder for use in constructing a high modulus layer of asphalt pavement, comprising:

providing at least one proposed asphalt binder;

measuring complex shear modulus of said proposed binder at a temperature of not more than about 30°C;

measuring creep stiffness of said proposed binder at a temperature near the lowest in-service temperature of said layer; and

selecting an asphalt binder for said high modulus layer using said complex shear modulus and creep stiffness measurements.

2. The method of claim 1, further comprising:

calculating thermal stress of said proposed binder from said creep stiffness measurements before selecting said asphalt binder for said high modulus layer.

3. The method of claim 1 wherein said selected binder is comprised of a mixture of a stiff asphalt binder and a soft asphalt binder.

4. The method of claim 3 wherein said stiff asphalt binder has a penetration value of no more than about 50 dmm when measured at 25°C.

5. The method of claim 4 wherein said soft asphalt binder has a penetration value of at least about 200 dmm when measured at 25°C.

6. The method of claim 3 wherein said stiff asphalt binder is comprised of bituminous bottoms.

7. The method of claim 6 wherein said soft asphalt binder is comprised of flux.

8. The method of claim 1, wherein said proposed asphalt binder is Rolling Thin Film Oven (RTFO) aged prior to said measuring steps.

9. The method of claim 1 wherein said complex shear modulus is measured at a temperature of at least about 10°C.

10. The method of claim 1 wherein said selected binder is comprised of asphalt and polymer.

11. The method of claim 1 wherein said selected binder has a complex shear modulus of at least about 2 MPa at 30°C and 10 rad/sec.

12. The method of claim 1 wherein said selected binder has a complex shear modulus of at least about 4 MPa at 30°C and 10 rad/sec.

13. The method of claim 11 wherein said selected binder has a creep stiffness of no more than about 300 MPa when measured at about 10°C above said lowest in-service temperature of said layer and 60 seconds loading time.

14. The method of claim 11 wherein said selected binder has a creep stiffness of no more than about 250 MPa when measured at about 10°C above said lowest in-service temperature of said layer and 60 seconds loading time.

15. The method of claim 11 wherein said selected binder has a creep stiffness of no more than about 200 MPa when measured at about 10°C above said lowest in-service temperature of said layer and 60 seconds loading time.

16. The method of claim 1, further comprising:

measuring ductility of said proposed binder before selecting said asphalt binder for said high modulus layer.

17. The method of claim 1 wherein said proposed binder is said selected binder.

18. The method of claim 13 wherein said selected binder has a maximum calculated thermal stress of about 0.3 MPa at approximately the lowest in-service temperature at the depth at which the layer is placed and a minimum ductility of about 10 cm at 25°C and 5 cm/min strain rate.

19. A method of formulating an asphalt binder for a high modulus layer of pavement, comprising:

providing a stiff asphalt binder;

providing a soft asphalt binder; and

mixing said stiff asphalt binder and said soft asphalt binder together to form a binder having a complex shear modulus of at least about 2 MPa at 30°C and 10 rad/sec and a creep stiffness of no more than about 300 MPa when measured at about 10°C above the lowest in-service temperature of said layer and 60 seconds loading time.

20. The method of claim 19 wherein said stiff asphalt binder is comprised of bituminous bottoms.

21. The method of claim 19 wherein said soft asphalt binder is comprised of flux.

22. The method of claim 19 wherein said stiff asphalt binder has a penetration value no greater than about 50 dmm at 25°C.

23. The method of claim 19 wherein said stiff asphalt binder has a penetration value no greater than about 25 dmm at 25°C.

24. The method of claim 19 wherein said stiff asphalt binder has a penetration value no greater than about 10 dmm at 25°C.

25. The method of claim 19 wherein said soft asphalt binder has a penetration value of at least about 200 dmm at 25°C.

26. The method of claim 19 wherein said soft asphalt binder has a penetration value of at least about 300 dmm at 25°C.

27. The method of claim 19, further comprising:

mixing a polymer with said stiff asphalt binder and said soft asphalt binder.

28. The method of claim 19 wherein said binder has a complex shear modulus of at least about 4 MPa at 30°C and 10 rad/sec.

29. The method of claim 19 wherein said binder has a creep stiffness of no more than about 250 MPa at a temperature about 10°C above the lowest in-service layer temperature and at 60 seconds loading time.

30. The method of claim 19 wherein said binder has a creep stiffness of no more than about 200 MPa at a temperature about 10°C above the lowest in-service layer temperature and at 60 seconds loading time.

31. The method of claim 19, wherein said binder has a complex shear modulus of at least about 2 MPa at 30°C and 10 rad/sec and a creep stiffness of no more than about 300 MPa at a temperature about 10°C above the lowest in-service layer temperature and at 60 seconds loading time when said binder is Rolling Thin Film Oven (RTFO) aged .